

## CLAIMS

1. Method for controlling a synchronous electric motor, particularly for fluid circulation pumps in conditioning systems and/or household appliances, comprising a permanent-magnet rotor, and wherein the application of predetermined voltage values to each of the windings (L1, L2) of the motor is provided, by means of a converter control circuit (10), characterised in that it provides:
- a continuous measure of the amplitude of the bus ( $V_r$ ) ripple;
  - a comparison with a reference value of said bus ( $V_r$ ) ripple and the calculation of the variation amount with respect to said reference value;
  - a subsequent variation of the voltage (V) applied to the motor windings (L1, L2) as a function of said variation amount thus obtaining a minimum current absorption by the motor.
2. Method according to claim 1, characterised in that said variation of the winding voltage is related to the amount of the load and thus to the flow rate or head of the pump.
3. Method according to claim 1, characterised in that, when limit operation conditions approach, the motor rotation frequency is adjusted adaptively by reducing the rotation speed but keeping the synchronous motor rotating with a minimum performance reduction with reference to the flow rate-head curve.
4. Method according to claim 1, characterised in that the measure of the amplitude of bus ( $V_r$ ) ripple is estimated with reference to a corresponding absorbed current decrease.
5. Method according to claim 1, characterised in that the motor control is sensorless and it lacks sensors effective to detect the rotor position.